

BROWNFIELD REDEVELOPMENT ASSESSMENT REPORT

FOR

BAY CITY CONFERENCE CENTER

BAY CITY, MICHIGAN

SEPTEMBER 27, 1996

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## EXECUTIVE SUMMARY

On April 2-3, 1996, Michigan Department of Environmental Quality (MDEQ) Pre-Remedial Group staff collected eighteen (18) soil boring samples and eight (8) groundwater samples from the Bay County Conference Center property.

Analysis of the 1996 soil boring and groundwater samples collected during the Brownfield Redevelopment Assessment (BFRA) and earlier 1995 Phase II investigations, detected the presence of arsenic and lead in several of the soil boring and groundwater samples. These contaminants of concern, and their highest concentrations, are greater than the Generic Residential Direct Contact Cleanup Criteria for the deep soils and greater than the Generic Residential Groundwater to Surface Water Interface values of Part 201 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (formerly known as the Michigan Environmental Response Act) (NREPA). The lead concentrations are also greater than the Generic Industrial Direct Contact for Subcategory IV Cleanup Criteria of NREPA. Therefore, the Bay County Conference Center qualifies as a facility.

Based upon the information gathered in the 1995 Phase II and 1996 BFRA investigations, a contamination plume of arsenic appears to be in the shallow groundwater aquifer which is flowing under the Bay County Conference Center property in a westerly direction to discharge into the Saginaw River. The potential source for this shallow groundwater plume appears to be the former auto dealership/bus maintenance garage located in the northeast corner of the property. Arsenic was not detected in any of the soil borings samples collected from around the Unisys building, the paved city parking lot or the strip of land east of Water Street. Nor was any arsenic detected in the soil boring and groundwater samples collected from 6th Street due north of the property.

Based on the findings of the BFRA investigation and the Michigan Department of Community Health (MDCH) Health Consultation Assessment, the following issues should be addressed before or during the redevelopment of the Bay County Conference Center property:

- Excavation of soil in the former auto dealership/bus maintenance area should be undertaken during the redevelopment of the Bay County Conference Center property to remove the potential source of contamination and to eliminate the potential of future direct contact exposure.

- The direct contact threat to area population or future workers to contamination in the deep soil is low as long as those soils are not brought to the surface during redevelopment. To eliminate potential surficial soil exposure of deep soils brought to the surface during renovation, an exposure barrier, such as a soil layer, should be placed on the property after construction and be included as part of the redevelopment plan.
- Investigation of a potential underground storage tank (UST) due north of the motel building should be undertaken and, if found, its removal and excavation of any surrounding contaminated soils should be done as part of the property redevelopment.

## INTRODUCTION

The MDEQ Pre-Remedial Group was contracted via a cooperative agreement with the U.S. Environmental Protection Agency (EPA) to conduct Statewide BFRAs. A brownfield is a property, or a portion thereof, that has actual or perceived contamination and an active potential for redevelopment or reuse. Properties which meet these qualifications have been selected by the city of Bay City to be investigated in the Statewide Brownfield Project.

BFRAs are intended to provide information on abandoned properties where potential environmental contamination may be acting as an impediment to future redevelopment activities. MDEQ Pre-Remedial Group staff conduct environmental investigations to determine the types and locations of past and present industrial activities, potential environmental migration pathways of concern, types and concentrations of potential contaminants and the need for remedial and/or removal actions on the property

The Bay County Conference Center BFRA included file and information searches, a reconnaissance inspection of the property and the collection of eighteen (18) soil boring samples and eight (8) groundwater samples from temporary Geoprobe monitoring wells.

## PROPERTY BACKGROUND

### Property Description

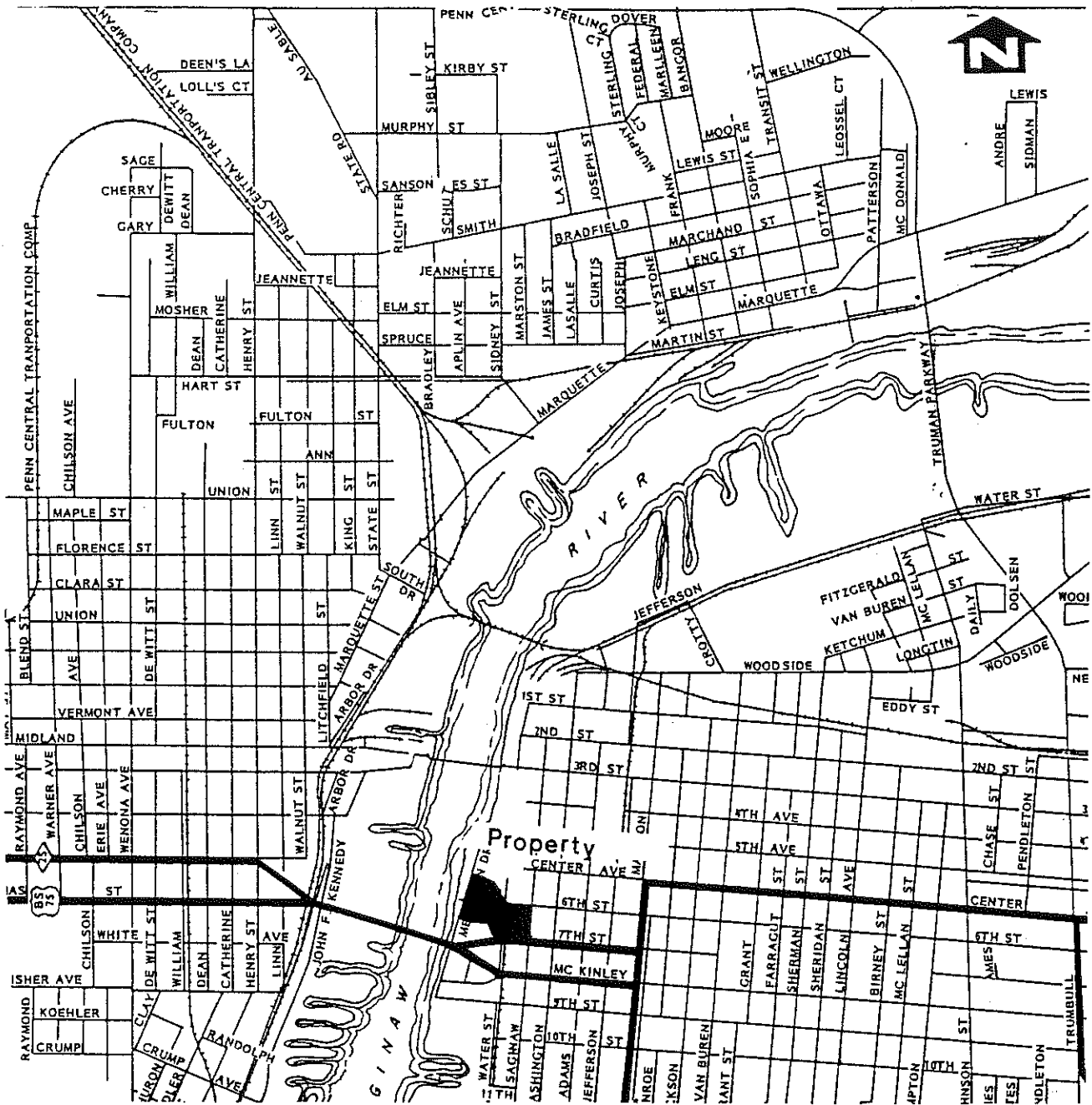
The proposed Bay County Conference Center, an approximately 2.5 acre property, is located at 621 North Water and 50 6th. Street in downtown Bay City, Bay County, Michigan. Mechelen Drive, the Saginaw River and a small log boom marina are due west of the property. 7th Street (also called the Veterans Memorial Bridge Ramp) is located due south of the parcel. Water Street and small businesses are to the east and Wenona Park is located to the north of the property. The Bay County Conference Center property itself consists of the parcel which contains the closed Gateway Motel building and a paved parking lot. As part of the BFRA, two adjacent parcels of land were investigated. The second parcel due north of the Gateway Motel is the paved road of 6th Street leading into Wenona Park (portions of which cover a small retention basin). The third parcel is a small lot to the east of the Gateway Motel consisting of the closed Unisys building, a paved city owned parking lot and the currently active A-1 Truck Parts and Machine Shop building with an adjacent parking lot. The proposed Bay County Conference Center building will be constructed on the Gateway Motel parcel with the surrounding land to be used for conference center parking. See Figure 1 for the Property Location Map.

### Property History

The property was originally developed as a sawmill at the turn of the century. An auto dealership was constructed at the eastern end of the property in 1935. The auto dealership included areas designated for auto repair, painting and lacquer spraying. Regulated substances, such as solvents, paints and various oils were therefore used in these areas for approximately thirty years. A small gas station is also believed to have been part of this area. The auto dealership building was then utilized as a bus maintenance facility from 1977 to 1981 by Bay Metro Transit. It is not clear when these facility structures were removed from the property. The western end of the property was a log boom area associated with the sawmill until 1956 at which time it was converted to a marina. Eighteen to twenty feet of fill material was placed in the log boom area marina during the construction of the Veteran Memorial Bridge in 1956. The Gateway Motel (formerly the Imperial 400 Motel) was built on the property in 1963 (Soil and Materials Engineers (SME) 1995). It is believed at least five USTs were located at the northeast corner of the property probably dating from the Metro Transit occupancy period. Reportedly four of these USTs were removed by Fletcher Oil Company in 1982. No soil samples were collected at the time of the removal to evaluate whether releases had occurred. Three of the USTs were 4000 gallon capacity tanks for

FIGURE 1

PROPERTY LOCATION MAP



gasoline and one was a 2000 gallon capacity tank for diesel. One UST may still be located in the northeast corner of the property (SME 1995). The only building currently on the west portion of the property is the closed and abandoned two story Gateway Motel. The closed and abandoned Unisys Building, a paved city owned parking lot and the active A-1 Truck Parts and Machine shop building currently occupy the parcel of land east of the property on Water Street. There was no historical information on this parcel available for this report.

SME conducted a small investigation of the Gateway Motel parcel in 1987. This investigation involved the drilling of three soil boring locations ranging from depths of 30 to 99.9 feet (SME 1995). The soil boring locations were placed in an east-west line with borings one and two east of the motel building and boring three located between the motel building and the Saginaw River. No samples were collected for analysis. See Appendix A for SME 1987 Soil Boring Location Map and Soil Boring Logs. SME also conducted a Phase I site investigation of the property in 1994 (SME 1995). The Phase I investigation involved a property visit as well as gathering information on the historical use of the property. Based on this information, RC Associates Incorporated (RC) conducted a Phase II investigation of the property in 1995. The Phase II investigation included the collection of twelve (12) soil boring samples, four (4) groundwater samples from temporary wells, a magnetometer survey in the northeast corner of the property and an asbestos investigation of the Gateway Motel (SME 1995). Analysis of the soil boring samples detected polynuclear aromatic hydrocarbons (PNAHs) and heavy metals from the borings located on the eastern half of the Gateway Motel parcel. Only arsenic was detected in six of the soil borings samples at concentrations which exceeded the NREPA Generic Residential Direct Contact values. See Table 1 for the 1995 Phase II Soil Boring Sample Analysis. Arsenic was also detected in two of the four groundwater samples (MW2, MW4) at concentrations exceeding NREPA Residential Groundwater to Surface Water Interface values. See Table 2 for the Phase II Groundwater Sample Analysis. MW2 is located in the southeast corner of the property and MW4 is located in the southwest corner of the property. Two anomalous readings were detected during the magnetometer survey. Analysis of the five asbestos samples taken from the Gateway Motel detected trace amounts of asbestos containing materials (ACM). See Appendix A for the Phase II soil boring and groundwater sample location map, sample analysis results as well as the asbestos sample analysis results.

TABLE 1

## 1995 PHASE II SOIL BORING SAMPLE SUMMARY

<u>SAMPLE #</u>	<u>CONTAMINANT</u>	<u>SAMPLE CONCENTRATION</u>	<u>PART 201 RESIDENTIAL DIRECT CONTACT CLEANUP CRITERIA</u>	<u>PART 201 INDUSTRIAL DIRECT CONTACT CLEANUP CRITERIA</u>
SB1	ARSENIC	21,660 ug/kg	6600 ug/kg	2.8E+5 ug/kg
SB2	ARSENIC	9433 ug/kg	6600 ug/kg	2.8E+5 ug/kg
SB3	ARSENIC	5128 ug/kg	6600 ug/kg	2.8E+5 ug/kg
SB4	ARSENIC	61,075 ug/kg	6600 ug/kg	2.8E+5 ug/kg
SB5	ARSENIC	11,619 ug/kg	6600 ug/kg	2.8E+5 ug/kg
SB6	ARSENIC	7709 ug/kg	6600 ug/kg	2.8E+5 ug/kg
SB7	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
SB8	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
SB9	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
SB10	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
SB11	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
SB12	NO CONNTAMINANT CONCENTRATION DETECTED ABOVE PART			
SB13	ARSENIC	18,399 uk/kg	6600 ug/kg	2.8E+5 ug/kg
SB14	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
SB15	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			

µg/kg = microgram/kilogram (parts per billion (ppb)).

A total of fifteen (15) soil boring samples were collected during the 1995 Phase II investigation.

**TABLE 2**

**1995 PHASE II TEMPORARY MONITORING WELL SAMPLE SUMMARY**

SAMPLE #	CONTAMINANT	SAMPLE CONCENTRATION	PART 201	PART 201
			RESIDENTIAL GSI WATER CLEANUP CRITERIA	INDUSTRIAL GSI WATER CLEANUP CRITERIA
MW1	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
MW2	ARSENIC	19.8 ug/l	11 ug/kg	50 ug/l
MW3	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
MW4	ARSENIC	18.4 ug/l	11 ug/l	50 ug/l

µg/l = microgram/liter (ppb).

A total of four (4) temporary monitoring well samples were collected during the 1995 Phase II investigation.



In late 1995, RC Associates collected three additional soil boring samples and groundwater samples in a north-south line along the west front of the Gateway Motel building. Analysis of the soil boring and groundwater samples detected the presence of PNAHs and dissolved metals in low concentrations which did not exceed NREPA Generic Residential Cleanup Standards for Direct Contact. Arsenic, however was detected in SB13 at a concentration which exceeded the Generic Residential Direct Contact value only. A second magnetometer survey was conducted. Three anomalous areas were detected in the north central and northwest corner of the property near the motel building. See Appendix A for the RC Associates 1995 soil boring sample and anomaly location map.

In 1996, at the request of the city of Bay City, a BFRA was conducted on this property, the adjoining 6th Street access road into Wenona Park, and the parcel east of the property consisting of the closed Unisys building, a city parking lot and the active A-1 Truck Parts facility. The BFRA attempted to further document the source, if possible, for the PNAH and dissolved metals contaminants discovered during the Phase II investigation.

## **PROCEDURES AND RESULTS**

The investigation team conducted a reconnaissance inspection of the Bay County Conference Center property and surrounding area on January 17, 1996 to make observations to aid in characterizing the property. The reconnaissance inspection included a walk-through of the property to determine appropriate health and safety requirements for conducting on-site activities. The team also determined sampling locations during the reconnaissance inspection. The investigation team conducted the sampling task on April 2 - 3, 1996.

### **Reconnaissance Inspection Observations**

The Bay County Conference Center property is currently occupied by the closed and abandoned Gateway Motel building and a paved parking lot east of the building extending to Water Street. The west edge of the property is bounded by the Saginaw River. The north edge of the property is bounded by 6th Street and Wenona Park. The east edge is bounded by Water Street and the parcel containing the Unisys Building, city owned parking lot and the active A-1 Truck parts. See Figure 2 for a Property Features Map.

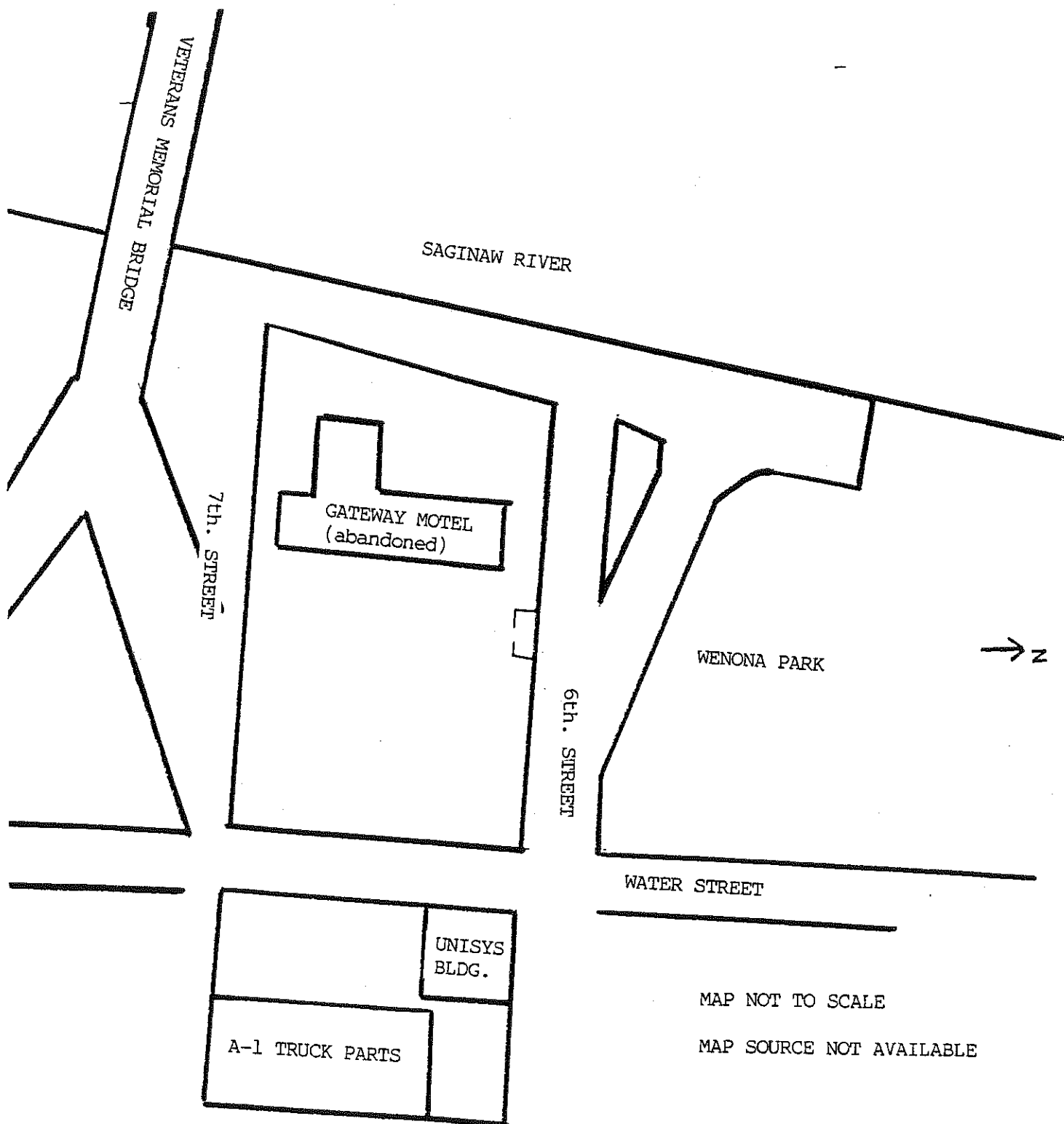
Photographs of the Bay County Conference Center property taken during the BFRA are provided in Appendix B.

As part of the BFRA, MDCH personnel accompanied the investigation team during the reconnaissance inspection and performed a Health Consultation Assessment. The results of the MDCH assessment can be found in the Health Consultation of the Bay County Conference Center property in Appendix C.

### **Building Audit**

A building audit of the closed Gateway Motel and the closed Unisys Building was not conducted as part of the BFRA. A building audit, however, was conducted during the Phase I investigation by SME. The building audit of the motel stated the building was constructed of a concrete slab on grade foundation system, concrete block walls and a wood truss and deck roofing system. The facility consists of an office, laundry/linen room, four small storage rooms and fifty two rental rooms (SME 1995). An asbestos investigation was conducted at the Gateway Motel by RC Incorporated as part of its Phase II investigation. Five percent chrysotile was detected in Samples 3, 4 and 5. This amount of asbestos meets the National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR 61, Subpart M, Effective Date: November 20, 1990 Definition for Category I nonfriable ACM which includes resilient floor coverings containing more than 1% asbestos. It is not known if the amount of ACM in the motel building meets the NESHAPs demolition standards of 160 square feet of ACM as no sample location measurements were provided in the Phase I report. Further investigation and evaluation of the ACM in the motel building should be undertaken before building demolition proceeds as NESHAPs guidelines may need to be followed. See Appendix A for the Phase II asbestos sample analysis results.

FIGURE 2  
PROPERTY FEATURES MAP



MAP NOT TO SCALE

MAP SOURCE NOT AVAILABLE

## **Sampling Procedures and Results**

On April 2 - 3, 1996, MDEQ Pre-Remedial Group staff collected eighteen (18) soil boring samples and eight (8) groundwater samples from temporary Geoprobe monitoring wells from suspected areas of contamination at the proposed Bay County Conference Center property and the adjoining two parcels. These samples were collected by the investigation team to determine the levels of EPA Target Compound List compounds (organic compounds) and Target Analyte List analytes (inorganic compounds) which may be present at the property.

Standard MDEQ collection and decontamination procedures, as outlined in the work plan, were adhered to during the collection of all samples. All samples were packaged and shipped in accordance with EPA required procedures and all EPA quality assurance/quality control procedures were followed. Laboratory analytical data for all the sample analyses are provided in Appendix D.

### **Soil Boring Samples**

The intent of the soil boring sampling was to evaluate the possibility of downward contaminant migration from potential source areas and the potential health and safety concerns, if any, associated with the deep soils at the property. A total of eighteen (18) soil boring samples were collected from twelve (12) soil boring locations. Four of the soil borings were located in a south-north line along the east face of the Gateway Motel building. Three additional soil boring locations were in the 6th. Street access road into Wenona Park north of the hotel building. The final five boring locations were south of the Unisys building, in the alleyway behind the A-1 Truck parts building parking lot and one east of the Unisys building in the paved city owned parking lot. SB17, located in the alley west of the A-1 Truck Parts building, was not collected. These samples were collected to characterize any possible contamination in the deep soils on the property and to determine any direct contact threats posed to nearby residential populations and future workers.

All soil boring samples were collected utilizing a Geoprobe rig according to the procedures outlined in the work plan. See Figure 3 for a map showing soil boring sample locations. A description of the soil boring sample locations and the sample characteristics can be found in Table 3. Table 4 gives a summary of the soil boring sample analytical results with comparisons to both of the Generic Residential and Industrial Direct Contact Cleanup Criteria of Part 201 of the NREPA.

FIGURE 3

SOIL BORING SAMPLING LOCATIONS

SAMPLE MEASUREMENTS

- SB 1,2 25 feet north of 7th. Street  
6 feet west of motel
- SB 3,4 106 feet north of 7th. Street  
6 feet west of motel
- SB 5,6 194 feet north of 7th. Street  
6 feet west of motel

SAGINAW RIVER

VETERANS MEMORIAL BRIDGE

7th. STREET

GATEWAY MOTEL  
(abandoned)

sb  
1,2

sb  
3,4

sb  
5,6

sb  
7,8

sb  
11,12

sb  
13,14

WENONA PARK → Z

SB 7,8 247 feet north of 7th. Street  
6 feet west of motel

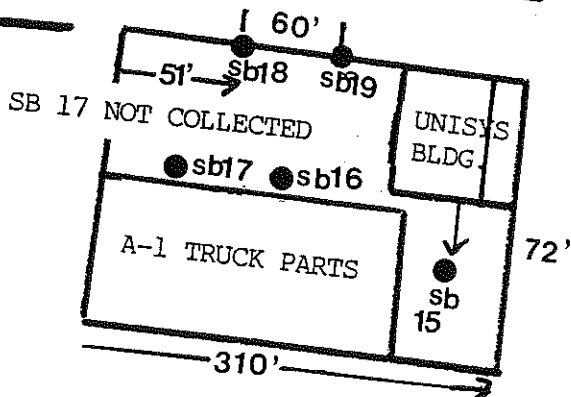
SB 9,10 31 feet north of motel property  
77 feet east into road

SB 11,12 128 feet west of SB 9,10 location

SB 13,14 133 feet north of SB 11,12 location

6th. STREET

WATER STREET



MAP NOT TO SCALE

MAP SOURCE NOT AVAILABLE

TABLE 3

## SOIL BORING SAMPLE DESCRIPTIONS

<u>SAMPLE NUMBER</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
BORE HOLE ONE	0 - 4 FEET	MOIST, BROWN GRAVELY TILL MATERIAL
SB 1	4 - 8 FEET	MOIST, COARSE BROWN FINE TO MEDIUM TEXTURED SAND MIXED WITH RED BRICK CHIPS AND GRAVEL
	8 - 12 FEET	WET, BROWN MEDIUM TEXTURED SAND MIXED WITH SOME CLAY, GRAVEL AND RED BRICK CHIPS
SB 2	12 - 16 FEET	WET, FINE GRAINED DARK BROWN SAND MIXED WITH SMALL AMOUNTS OF GRAVEL, RED BRICK CHIPS AND SOME WOOD FIBERS
BORE HOLE TWO	0 - 4 FEET	DRY GRAVEL FILL MATERIAL
SB 3	4 - 8 FEET	DRY, GRAY CLAY
	8 - 10 FEET	DRY, FINE GRAINED BROWN SAND MIXED WITH SOME GRAVEL
	10 - 12 FEET	MOIST, DARK BROWN SAND MIXED WITH SOME GRAVEL AND CLAY
SB 4	12 - 14 FEET	WET, FINE GRAINED BLACK SAND
SB 4	14 - 16 FEET	WET, FINE GRAINED BROWN SAND WITH SOME WOOD FIBERS AND CHIPS
BORE HOLE THREE	0 - 4 FEET	BROWN FILL MATERIAL 0 - 8" DRY COARSE GRAINED , YELLOW SAND 8 -12" FINE GRAINED BROWN SAND 12 - 20" LIGHT BROWN CLAY 20 - 24"
SB 5	4 - 8 FEET	DRY, LIGHT TO DARK BROWN FINE GRAINED SAND MIXED WITH SOME CLAY 4 - 7 FEET MOIST, LIGHT BROWN FINE GRAINED SAND 7 - 8 FEET
SB 6	8 - 12 FEET	WET, LIGHT GRAY FINED GRAINED SAND AND SOME CLAY 8 - 10 FEET WOOD FIBERS AND CHIPS 10 - 12 FEET
	12 - 16 FEET	WOOD FIBERS AND CHIPS

TABLE 3 (cont.)

## SOIL BORING SAMPLE DESCRIPTIONS

<u>SAMPLE NUMBER</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
BORE HOLE FOUR	0 - 4 FEET	MOIST, LIGHT BROWNS FINE GRAINED SAND
SB 7	4 - 8 FEET	MOIST LIGHT BROWN TO DARK GRAY, FINE GRAINED SAND MIXED WITH SOME CLAY
SB 8	8 - 12 FEET	MOIST, LIGHT BROWN, FINE GRAINED SAND WITH SOME CLAY, 8 - 10 FEET MOIST, DARK BROWN FINE GRAINED SAND WITH SOME CLAY AND WOOD FIBERS, 10 - 12'
	12 - 16 FEET	WOOD FIBERS AND CHIPS
BORE HOLE FIVE	0 - 4 FEET	ASPHALT 2" DARK BROWN FILL MATERIAL, 0 - 1 FEET LIGHT BROWN CLAY WITH SOME SAND, 1 - 3' MOIST, COARSE, GRAINED, GRAY SAND, 3 - 4'
SB 9	4 - 8 FEET	LIGHT BROWN CLAY, 4 - 7 FEET MOIST, COARSE GRAINED, GRAY SAND WITH STRONG HYDROCARBON ODOR, 7 - 8'
	8 - 12 FEET	WET, COARSE GRAINED, GRAY SAND
SB 10	12 - 16 FEET	WET, COARSE GRAINED, GRAY SAND
BORE HOLE SIX	0 - 4 FEET	ASPHALT 4" GRAY TO BROWN CLAY, 4" TO 4 FEET
SB 11	4 - 8 FEET	WET, LIGHT GRAY CLAY WITH SOME FINE GRAINED SAND
	8 - 12 FEET	NO SAMPLE RECOVERY MADE
SB 12	12 - 16 FEET	WET, GRAY CLAY WITH FINE SAND

TABLE 3 (cont.)

## SOIL BORING SAMPLE DESCRIPTION

<u>SAMPLE NUMBER</u>	<u>DEPTH</u>	<u>DESCRIPTION</u>
BORE HOLE SEVEN	0 - 4 FEET	NO SAMPLE RECOVERY
SB 13	4 - 8 FEET	WET, COARSE GRAINED, GRAY SAND MIXED WITH SOME BLACK SAND AND WOOD CHIPS
	8 - 12 FEET	WET, COURSE GRAINED SAND WITH SOME GRAVEL AND WOOD CHIPS
SB 14	12 - 16 FEET	WET, COARSE GRAINED, GRAY SAND WITH SOME WOOD CHIPS MIXED IN
BORE HOLE EIGHT	0 - 4 FEET	NO SAMPLE RECOVERY MADE
	4 - 8 FEET	DRY, LIGHT BROWN CLAY
SB 15	8 - 12 FEET	DRY, LIGHT BROWN CLAY
BORE HOLE NINE	0 - 4 FEET	NO SAMPLE RECOVERY MADE
SB 16	4 - 8 FEET	DRY, LIGHT BROWN CLAY
BORE HOLE NINE (SB 17) WAS NOT DRILLED, NO INFORMATION AVAILABLE		
BORE HOLE TEN	0 - 4 FEET	BLACK FILL MATERIAL
	4 - 8 FEET	DRY, LIGHT BROWN CLAY WITH SOME FINE GRAINED SAND
SB 18	8 - 12 FEET	DRY, LIGHT BROWN CLAY
BORE HOLE ELEVEN	0 - 4 FEET	MOIST, COARSE GRAINED, BLACK SAND 0 - 2 FEET DRY, LIGHT BROWN CLAY WITH SOME SAND, 2 - 4 FEET
	4 - 8 FEET	DRY, LIGHT BROWN CLAY
SB 19	4 - 8 FEET	DRY, LIGHT BROWN CLAY



**TABLE 4****1996 BFRA SOIL BORING SAMPLE SUMMARY**

<b>SAMPLE #</b>	<b>CONTAMINANT</b>	<b>SAMPLE CONCENTRATION</b>	<b>PART 201 RESIDENTIAL DIRECT CONTACT CLEANUP CRITERIA</b>	<b>PART 201 INDUSTRIAL DIRECT CONTACT CLEANUP CRITERIA</b>
<b>SB1</b>	<b>LEAD</b>	<b>554 mg/kg</b>	<b>400 mg/kg</b>	<b>400 mg/kg</b>
<b>SB2</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB3</b>	<b>LEAD</b>	<b>897 mg/kg</b>	<b>400 mg/kg</b>	<b>400 mg/kg</b>
<b>SB4</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB5</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB6</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB7</b>	<b>NO CONTAMINANT CONTENTRATION DETECTED ABOVE PART 201</b>			
<b>SB8</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB9</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB10</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB11</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB12</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB13</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB14</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			
<b>SB15</b>	<b>NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201</b>			

**TABLE 4**

**1996 BFRA SOIL BORING SAMPLE SUMMARY**

<b>SAMPLE #</b>	<b>CONTAMINANT</b>	<b>SAMPLE CONCENTRATION</b>	<b>PART 201 RESIDENTIAL DIRECT CONTACT CLEANUP CRITERIA</b>	<b>PART 201 INDUSTRIAL DIRECT CONTACT CLEANUP CRITERIA</b>
<b>SB16</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
<b>SB18</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
<b>SB19</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			

µg/kg = microgram/kilogram (parts per billion (ppb)).  
mg/kg = milligram/kilogram (parts per million (ppm)).

A total of eighteen (18) soil boring samples were collected during the BFRA.

Lead was the only contaminant found in the soil boring samples (SB1 and SB3) at concentrations which exceeded both the Generic Residential and Industrial Cleanup Criteria for Direct Contact values. PNAH contaminants were found in nearly all the soil boring samples around the motel building and 6th Street but none of the concentrations exceeded NREPA Generic Residential or Industrial Cleanup Criteria for Direct Contact values.

#### Temporary Geoprobe Monitoring Well Samples

The intent of the temporary Geoprobe monitoring well sampling was to determine if there had been any migration of possible contamination from the potential source areas into the shallow aquifer in the property area. The sampling was also conducted to determine the potential health and safety concerns, if any, associated with the groundwater in the area of the property. Eight (8) temporary monitoring well groundwater samples (including one duplicate sample) were collected from seven (7) temporary wells installed using a GeoProbe rig. The samples were collected to characterize any possible contamination in the groundwater in the area of the property and to determine any drinking water threats posed to nearby residential populations.

All temporary monitoring well samples were collected utilizing teflon tubing and a peristaltic pump from a temporary Geoprobe well according to the procedures outlined in the work plan. See Figure 4 for a map showing the Geoprobe well sample locations. A description of the Geoprobe well sample locations and the sample characteristics can be found in Table 5. Table 6 gives a summary of the Geoprobe well sample analytical results with comparisons to both the Generic Residential and Industrial Cleanup Criteria of Part 201 of the NREPA.

Nickel was the only contaminant found in MW2 at a concentration which exceeded both the Generic Residential and Industrial Groundwater to Surface Water Interface values.

FIGURE 4

GEOPROBE TEMPORARY MONITORING WELL SAMPLING LOCATIONS

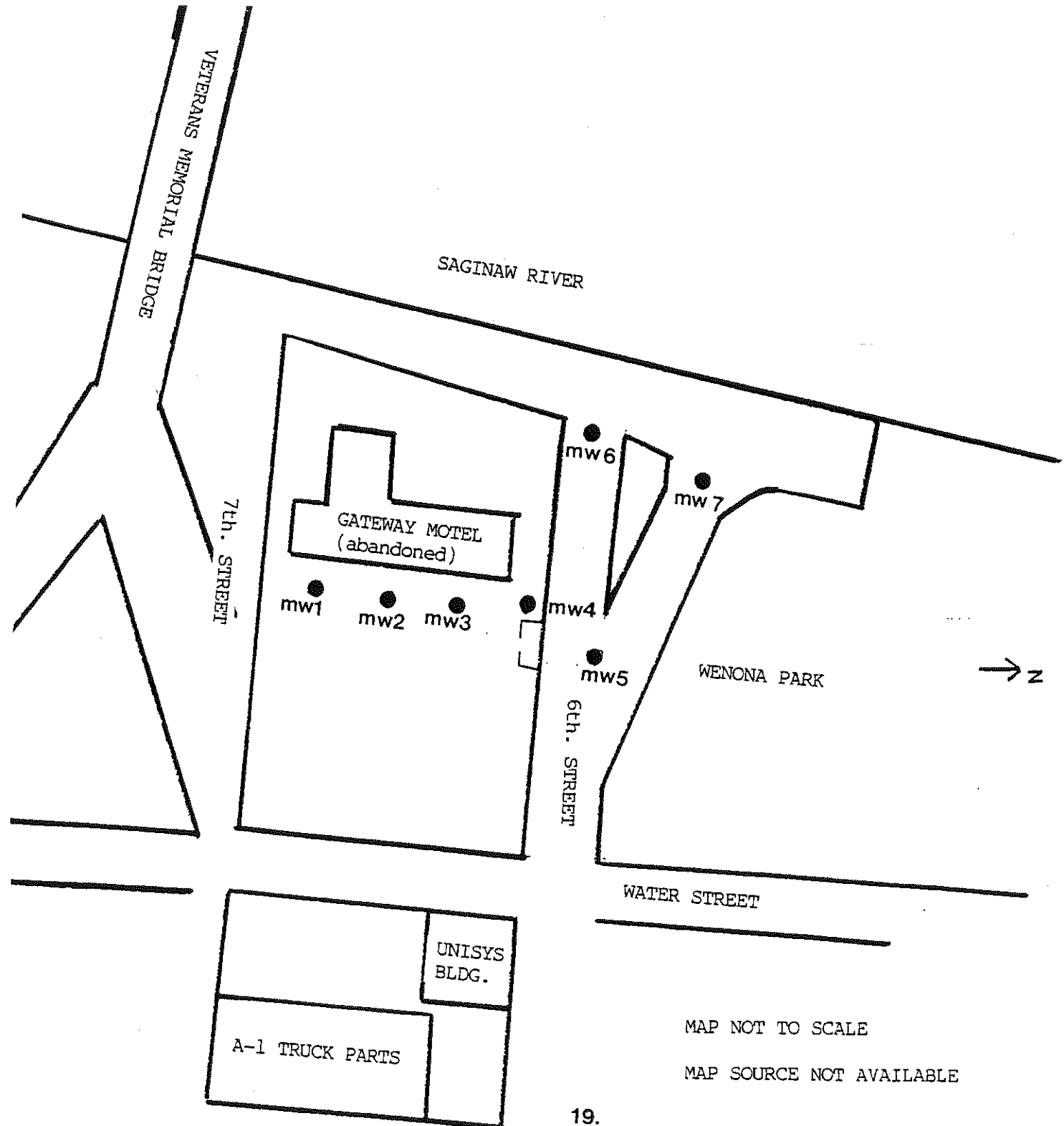


TABLE 5

## 1996 BFRA TEMPORARY MONITORING WELL SAMPLE DESCRIPTIONS

SAMPLE #	LOCATION	APPEARANCE	COND.	DEPTH (ft.)	DESIGNATION
			(ms) $\mu$ pH TEMP.(°C)		
MW1	25 feet north of 7th. Street and 6 feet east of motel	Cloudy, silty	C=4.85 pH=6.28 T=7.6 C		Grab sample VOA only
MW2	106 feet north of 7th. Street and 6 feet east of motel	Cloudy, silty	C=1.63 pH=6.36 T=8.8 C		Grab sample
MW3	194 feet north of 7th. Street and 6 feet east of motel	Cloudy, silty	C=1.70 pH=6.21 T=10 C		Grab sample
MW4	247 feet north of 7th. Street and 6 feet east of motel	Cloudy, silty	C=2.37 pH=6.17 T=8.9 C		Grab sample
MW5	31 feet north of motel parcel and 77 feet east	Cloudy, silty	C=2.74 pH=6.45 T=5.3 C		Grab sample
MW6	128 feet west of MW5 and 15 feet north of corner	Cloudy, silty	C=4.44 pH=6.27 T=5.6 C		Grab sample
MW7	133 feet north of MW6 location in 6th. Street	Cloudy, silty	C=4.56 pH=6.29 T=6.7 C		Grab sample
MW7D	Same as MW7	Cloudy, silty	C=4.56 pH=6.29 T=6.7 C		Grab sample

**TABLE 6**

**1996 BFRA TEMPORARY MONITORING WELL SAMPLE SUMMARY**

<b>SAMPLE #</b>	<b>CONTAMINANT</b>	<b>SAMPLE CONCENTRATION</b>	<b>PART 201 GENERIC RESIDENTIAL GSI CLEANUP CRITERIA</b>	<b>PART 201 GENERIC INDUSTIRAL GSI CLEANUP CRITERIA</b>
<b>MW1</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
<b>MW2</b>	NICKEL	79.3 ug/l	57 ug/l	57 ug/l
<b>MW3</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
<b>MW4</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
<b>MW5</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
<b>MW6</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
<b>MW7</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			
<b>MW7D</b>	NO CONTAMINANT CONCENTRATION DETECTED ABOVE PART 201			

µg/l = microgram/liter (ppb).

A total of eight (8) temporary monitoring well samples (including one duplicate) were collected during the BFRA.

## DISCUSSION

Analysis of the soil boring and temporary monitoring well groundwater samples collected during the 1995 Phase II and 1996 BFRA investigations, detected the presence of lead and arsenic in the deep soils and arsenic and nickel in the groundwater samples. These contaminants of concern were detected at concentrations greater than the Generic Residential Cleanup Criteria of Part 201 of the NREPA. The concentrations of lead were also greater than the Generic Industrial Cleanup Criteria of Part 201 of the NREPA. Because these contaminants were detected at concentrations in excess of the Generic Residential Cleanup criteria, the Bay County Conference Center property qualifies as a facility under Part 201.

Based upon the information gathered in the 1995 Phase II and 1996 BFRA investigations, a contamination plume of arsenic appears to be in the shallow groundwater aquifer which is flowing under the Bay County Conference Center property in a westerly direction to discharge into the Saginaw River. The potential source for this shallow groundwater plume appears to be the former auto dealership/bus maintenance garage located in the northeast corner of the property. Arsenic was not detected in any of the soil borings samples collected from around the Unisys building, the paved city parking lot or the strip of land east of Water Street. Nor was any arsenic detected in the soil boring and groundwater samples collected from 6th Street due north of the property.

Based on the findings of the BFRA investigation and the MDCH Health Consultation Assessment, the following issues should be addressed before or during the redevelopment of the Bay County Conference Center property:

- Excavation of soil in the former auto dealership/bus maintenance area should be undertaken during the redevelopment of the Bay City Conference Center property to remove the potential source of contamination and to eliminate the potential of future direct contact exposure.
- The direct contact threat to area population or future workers to contamination in the deep soil is low as long as those soils are not brought to the surface during redevelopment. To eliminate potential surficial soil exposure of deep soils brought to the surface during renovation, an exposure barrier, such as a soil layer should be placed on the property after construction and be included as part of the redevelopment plan.
- Investigation of a potential UST due north of the motel building should be undertaken and, if found, its removal and excavation of any surrounding contaminated soils should be done as part of the property redevelopment.

## BIBLIOGRAPHY

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